

IN THE CLAIMS:

Please CANCEL claims 19, 23, 25, 33-36, 38 and 39 without prejudice to or disclaimer of the recited subject matter.

Please AMEND claims 20, 26-31, 37, 40 and 41, and ADD new claims 42-47 as follows. A marked-up copy of the amended claims showing the changes made thereto is attached. Note that all the claims currently pending in this application, including those not currently being amended, have been reproduced below for the Examiner's convenience.

1
20. (Amended) An exposure apparatus comprising:

C1
an optical system, which directs an exposure beam emitted from a light source onto a substrate, said optical system including a casing and an optical element, said casing having a closed space and said optical element being disposed in the closed space;

a first supplier, which supplies an inert gas into the closed space;

a second supplier, which supplies one of oxygen and clean air into the closed space;

a discharger, which discharges the gas from the closed space; and

a controller for changing a wavelength of the exposure beam between an exposure process for the substrate and a cleaning process for the optical element,

wherein said controller controls said first supplier and said second supplier.

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An apparatus according to Claim 20, wherein said first supplier comprises a first valve, said second supplier comprises a second valve and said controller controls said first valve and said second valve.

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An apparatus according to Claim 20, wherein said controller controls a concentration of oxygen in the closed space.

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(Amended) An exposure apparatus comprising:

C2 an optical system, which directs an exposure beam emitted from a light source onto a substrate, said optical system including a casing and an optical element, said casing having a closed space and said optical element being disposed in the closed space;

a first supplier, which supplies an inert gas into the closed space;

a second supplier, which supplies one of oxygen and clean air into the closed space;

a discharger, which discharges the gas from the closed space; and

a controller for changing a wavelength of the exposure beam between an exposure process for the substrate and a cleaning process for the optical element,

wherein said controller changes the wavelength of the exposure beam into a wavelength region higher than an oxygen absorptivity when said second supplier supplies the oxygen.

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27. (Amended) An exposure apparatus comprising:

(2) an optical system, which directs an exposure beam emitted from a light source onto a substrate, said optical system including a casing and an optical element, said casing having a closed space and said optical element being disposed in the closed space;

a first supplier, which supplies an inert gas into the closed space;

a second supplier, which supplies one of oxygen and clean air into the closed space;

a discharger, which discharges the gas from the closed space; and

a controller for changing a wavelength of the exposure beam between an exposure process for the substrate and a cleaning process for the optical element,

wherein said controller changes the wavelength of the exposure beam to a shorter wavelength when said second supplier supplies the oxygen.

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28. (Amended) An exposure apparatus comprising:

an optical system, which directs an exposure beam emitted from a light source onto a substrate, said optical system including a casing and an optical element, said casing having a closed space and said optical element being disposed in the closed space;

a first supplier, which supplies an inert gas into the closed space;

a second supplier, which supplies one of oxygen and clean air into the closed space;

a discharger, which discharges the gas from the closed space;

a controller for changing a wavelength of the exposure beam between an exposure process for the substrate and a cleaning process for the optical element; and

a laser control device which changes the emission laser wavelength region,

wherein said controller controls said laser control device.

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29. (Amended) An exposure apparatus comprising:

an optical system, which directs an exposure beam emitted from a light source onto a substrate, said optical system including a casing and an optical element, said casing having a closed space and said optical element being disposed in the closed space;

a first supplier, which supplies an inert gas into the closed space;

a second supplier, which supplies one of oxygen and clean air into the closed space;

a discharger, which discharges the gas from the closed space; and

a controller for changing a wavelength of the exposure beam between an exposure process for the substrate and a cleaning process for the optical element,

wherein said controller oscillates the wavelength region continuously.

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30. (Amended) An exposure apparatus comprising:

an optical system, which directs an exposure beam emitted from a light source onto a substrate, said optical system including a casing and an optical element, said casing having a closed space and said optical element being disposed in the closed space;

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a first supplier, which supplies an inert gas into the closed space;
a second supplier, which supplies one of oxygen and clean air into the closed space;
a discharger, which discharges the gas from the closed space; and
a controller for changing a wavelength of the exposure beam between an exposure process for the substrate and a cleaning process for the optical element, wherein said controller controls actuation of said light source.

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31. (Amended) An exposure apparatus comprising:

an optical system, which directs an exposure beam emitted from a light source onto a substrate, said optical system including a casing and an optical element, said casing having a closed space and said optical element being disposed in the closed space;
a first supplier, which supplies an inert gas into the closed space;
a second supplier, which supplies one of oxygen and clean air into the closed space;
a discharger, which discharges the gas from the closed space; and
a controller for changing a wavelength of the exposure beam between an exposure process for the substrate and a cleaning process for the optical element, wherein said controller inserts a wavelength changing element into a path of the exposure beam.

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32. An apparatus according to Claim 31, wherein said wavelength changing element is a harmonic wave producing element.

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37. (Amended) A device manufacturing method comprising the steps of:

providing an exposure apparatus comprising:

(i) an optical system, which directs an exposure beam emitted from a light source onto a substrate, said optical system including a casing and an optical element, said casing having a closed space and said optical element being disposed in the closed space,

(ii) a first supplier, which supplies an inert gas into the closed space,

(iii) a second supplier, which supplies one of oxygen and clean air into the closed space,

(iv) a discharger, which discharges the gas from the closed space, and

(v) a controller for changing a wavelength of the exposure beam between an exposure process for the substrate and a cleaning process for the optical element;

exposing a substrate by use of the exposure apparatus; and

developing the exposed substrate.

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40. (Amended) An exposure apparatus comprising:

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an optical system, which directs an exposure beam emitted from a light source onto a substrate, said optical system including a casing and an optical element, said casing having a closed space and said optical element being disposed in the closed space;

a first supplier, which supplies an inert gas into the closed space;

a second supplier, which supplies one of oxygen and clean air into the closed space; and

a controller, which controls concentration of oxygen in the closed space,

wherein said controller functions so that, before exposure of the substrate, the inside of the closed space is filled with substantially only the inert gas.

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41. (Amended) A device manufacturing method, comprising the steps of:

providing an exposure apparatus comprising:

(i) an optical system, which directs an exposure beam emitted from a light source onto a substrate, said optical system including a casing and an optical element, said casing having a closed space and said optical element being disposed in the closed space,

(ii) a first supplier, which supplies an inert gas into the closed space,

(iii) a second supplier, which supplies one of oxygen and clean air into the closed space, and

(iv) a controller, which controls concentration of oxygen in the closed

CY space;

exposing a substrate by use of the exposure apparatus; and

developing the exposed substrate.

Please ADD new claims 42-47 as follows:

CS -- 42. An exposure apparatus, comprising:

an optical system, which directs an exposure beam emitted from a light source onto a substrate, said optical system including a casing and an optical element, said casing having a closed space and said optical element being disposed in the closed space;

a first supplier, which supplies an inert gas into the closed space and the optical system; and

a second supplier, which supplies one of oxygen and clean air into the closed space.

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43. An apparatus according to Claim 42, further comprising a discharger, which discharges the gas from the closed space.

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44. An apparatus according to Claim 42, wherein, in a state in which a gas that contains oxygen is introduced in the closed space by said second supplier, the beam is projected to thereby clean the optical element.

17-18

~~45.~~ A device manufacturing method, comprising the steps of:
providing an exposure apparatus as recited in Claim ~~42~~¹⁴;
exposing a substrate by use of the exposure apparatus; and
developing the exposed substrate.

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~~46.~~

An exposure apparatus, comprising:
an optical system, which directs an exposure beam emitted from a light source
onto a substrate, said optical system including a casing and an optical element, said casing having
a closed space and said optical element being disposed in the closed space;
a first supplier, which supplies an inert gas into the closed space; and
a second supplier, which supplies one of oxygen and clean air into the closed
space,
wherein, in a state in which a gas that contains oxygen is introduced into the
closed space by said second supplier, the beam is projected to thereby clean the optical element.

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~~47.~~ A device manufacturing method, comprising the steps of:
providing an exposure apparatus as recited in Claim ~~46~~¹⁸;
exposing a substrate by use of the exposure apparatus; and
developing the exposed substrate. --

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